



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,820	03/31/2004	Raimund Strobel	1-17858	5052
68450 7590 08/21/2008 MARSHALL & MELHORN, LLC FOUR SEAGATE 8TH FLOOR TOLEDO, OH 43804				
EXAMINER CRUPEAU, JONATHAN				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
08/21/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/813,820

Applicant(s)

STROBEL ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1795

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-28 is/are pending in the application.
- 4a) Of the above claim(s) 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-24 and 26-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date 9/16/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application.
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I in the reply filed on July 3, 2008 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 12-17, 19-21, and 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 01/82399. The reference teaches a bipolar plate for a fuel cell. The plate is made of a conductive material (page 3, line 12) and is relatively thin so as to be a "foil." The plate comprises fluid conducting channels and electrical contact surfaces (lands), which comprise a plurality of contact-enhancing microstructures (see abstract). The channels are located between the lands, i.e., between at least two microstructures. The microstructures are integrated into the foil and are capable of "enhancing the rigidity of said foil" as recited in claims 12 and 26. Regarding claims 13 and 27, the microstructures have a polygonal cross-section (see Fig. 3). Regarding claim 15, although the reference does not appear to teach that the microstructures are made by an embossing or etching process, this claim is given little patentable weight since it does not limit the structure of the plate (see MPEP 2113). Regarding claims 16 and 28, the fluid

conducting channels may be made by milling or engraving (i.e., etching) (see page 2, line 24). Regarding claim 17, the length of the microstructures is less than 400 microns (see page 4, line 1). Regarding claim 19, the reactant channels are capable of draining away condensed reaction products. Regarding claim 20, each of the microstructures includes a recessed center and forms a trough-like depression (see Fig. 3). Regarding claim 21, the foil is inherently hydrophobic.

Thus, the instant claims are anticipated.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 18 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/82399 in view of Lewinski et al (U.S. Patent 6,555,261).

Regarding claim 18, WO '399 further teaches an exemplary plate (foil) thickness of 3 mm on page 6, line 10. However, the reference does not expressly teach the claimed thickness of less than 0.5 mm, or that the microstructures include at least one substructure as recited in claims 22-24.

Lewinski et al. is directed to microstructured flow fields for bipolar plates. In column 4, line 2 et seq., the reference teaches that the microstructured flow channels of the invention

further contain microfeatures at the base of the channels. The microfeatures preferably have a dimension of less than 100 microns.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to include the microfeatures (corresponding to the claimed substructures) into the microstructures of WO '399. In column 4, line 4, Lewinski et al. teach that the substructures "provide for new mechanisms of water removal and for improved electrical and thermal contact with the diffuser." As such, the artisan would be motivated to incorporate the microfeatures of Lewinski et al. into the microstructures of WO '299.

Regarding claim 18, Lewinski et al. teach in claim 1 of the patent a flow field plate having a thickness of 1 mm or less. This teaching would render obvious Applicant's claimed thickness of less than about 0.5 mm. It is known that thinner plates/foils are advantageous from a standpoint of volume efficiency, and the artisan would therefore be motivated to use a thickness of about 0.5 mm or less in the foil of WO '399.

Although Lewinski et al. do not appear to provide details regarding the exact structure of the microfeatures, it would be obvious to use a coating method to form them, as recited in claim 24. This would be particularly relevant if the microfeatures were formed of a different material than the plate. Accordingly, the recitation of the substructure including a coating is not considered to distinguish over the references.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (571) 272-1292. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jonathan Crepeau/
Primary Examiner, Art Unit 1795
August 23, 2008